

# Customer Segmentation Report

## Customer Segmentation Report

### Overview

This report presents the results of customer segmentation for the eCommerce dataset. The segmentation identifies distinct customer groups based on spending habits, transaction behavior, and product preferences.

### Clustering Approach

Algorithm: KMeans

Optimal Number of Clusters: 4 (determined using the Davies-Bouldin Index)

Evaluation Metric: Davies-Bouldin Index = 0.44 (lower is better, indicating well-separated clusters).

### Cluster Characteristics

#### Cluster 0

Average Total Spend: Moderate

Average Transaction Value: Balanced

Preferred Category: Home Decor

Number of Customers: 44

#### Cluster 1

Average Total Spend: High

Average Transaction Value: High

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Preferred Category: Books

Number of Customers: 54

### Cluster 2

Average Total Spend: Balanced

Average Transaction Value: High

Preferred Category: Electronics

Number of Customers: 51

### Cluster 3

Average Total Spend: Moderate

Average Transaction Value: Moderate

Preferred Category: Clothing

Number of Customers: 50

## Insights and Recommendations

### High-Value Customers (Cluster 1):

Customers in this cluster contribute significantly to revenue.

Strategy: Focus marketing efforts on books and loyalty programs to retain these customers.

### Electronics Enthusiasts (Cluster 2):

These customers prefer electronics and spend consistently high amounts.

Strategy: Introduce bundled offers and discounts on electronics to maximize value.

### Home Decor Shoppers (Cluster 0):

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Moderate spenders with a focus on home decor.

Strategy: Run seasonal campaigns or discounts to encourage higher spending.

Clothing Customers (Cluster 3):

Moderate spenders focused on clothing purchases.

Strategy: Offer personalized clothing recommendations based on past transactions.

### Visualizations

Cluster Scatter Plot: Visualizing customer clusters based on total spend and average transaction value.

Preferred Categories by Cluster: Highlighting the dominant product category for each cluster.

### Conclusion

This segmentation provides actionable insights for targeted marketing and resource allocation. By focusing on the distinct needs and behaviors of each cluster, the eCommerce platform can optimize customer engagement and revenue generation.